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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,811	04/05/2004	Masayuki Kyoshima	00862.023531	5018

5514 7590 03/13/2006

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EXAMINER

FIDLER, SHELBY LEE

ART UNIT	PAPER NUMBER
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2861

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/816,811

Applicant(s)

KYOSHIMA, MASAYUKI

Examiner

Shelby Fidler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 8-13 is/are rejected.
- 7) ☒ Claim(s) 5-7 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/5/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/3/2004</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Ono (US 5191357).

Ono teaches the following:

***regarding claims 1 and 2**, a printhead substrate using a first printhead substrate (*thermal head 116, Figure 7*) having a plurality of printing elements, each including an electrothermal transducer (*heating resistors 120, Figure 1*), and wherein the first printhead substrate further comprises:

a selection circuit (*control circuit 111, Figure 1*) which selects, in accordance with an input control signal (*control signals, col. 3, lines 1-4*), a printing signal input (*command for recording commencement, col. 3, lines 51-61*) via a signal line (*element 104, Figure 1*) and a predetermined signal for driving the printing elements (*command for preheat commencement, col. 4, lines 30-32*);

and an input unit which inputs a driving signal for driving the plurality of printing elements (*input unit 103, Figure 1*),

wherein in a case where printing operation by driving the plurality of printing elements in accordance with the printing signal is suppressed, the selection circuit selects the

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predetermined signal (*col. 4, lines 5-9*), and drives the printing elements on the basis of the predetermined printing signal by a short pulse signal insufficient to print (*col. 4, lines 11-14 with col. 4, lines 59-61*)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, 8, 9, 10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono (US 5191357) in view of Tanaka et al. (US 6027198).

Ono teaches the following:

***regarding claim 4**, the first printhead substrate comprises the control signal (*control signals, col. 3, lines 1-4*), the control signal functions as a signal for selecting the printing signal in a case where printing operation is performed by driving the plurality of printing elements in accordance with the printing signal (*command for recording commencement, col. 3, lines 62-68*), while the control signal functions as a signal for selecting the predetermined signal (*command for preheating commencement, col. 4, lines 30-32*) in a case where printing operation by driving the plurality of printing elements in accordance with the printing signal is suppressed (*col. 4, lines 5-9*)

***regarding claim 8**, the printhead includes an inkjet printhead which prints by discharging ink (*col. 10, lines 15-17*)

***regarding claim 10**, a printing apparatus for printing by discharging ink onto a printing medium using a printhead according to claim 3 (*col. 1, lines 13-17*)

Ono does not expressly teach the following:

***regarding claim 3**, a second printhead substrate; and at least one shared signal line between the first printhead substrate and the second printhead substrate

***regarding claim 4**, the first printhead comprises dedicated signal lines for inputting a selection signal used for time-divisionally driving the plurality of printing elements

***regarding claim 9**, an ink tank which is integrated with the printhead and supplies the ink

Tanaka et al. teach the following:

***regarding claim 3**, a second printhead substrate (*col. 5, lines 20-23*); and at least one shared signal line between the first printhead substrate and the second printhead substrate (*LTCLK is shared between substrates, Figure 5*)

***regarding claim 4**, the first printhead comprises dedicated signal lines for inputting a selection signal used for time-divisionally driving the plurality of printing elements (*HENBK is dedicated to BK printhead, Figure 5*)

***regarding claim 9**, an ink tank which is integrated with the printhead and supplies the ink (*ink tank 5026, Figure 1*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine Ono's preheating control system with Tanaka et al.'s multiple printhead substrates. The motivation for doing so is to have a separate printhead substrates for each color, so that each printhead may be exchanged separately.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono (US 5191357) in view of Tanaka et al. (US 6027198), as applied to claim 10 above, and further in view of Hirisawa et al. (US 6022096).

Tanaka et al. teaches the following:

***regarding claim 11**, a first ink tank which stores black ink to be used for print operation in the first printhead substrate (110K, *Figure 4*)

Ono and Tanaka et al. do not expressly teach the following:

***regarding claim 11**, a second ink tank which stores cyan ink, magenta ink, and yellow ink to be used for print operation in the second printhead substrate

***regarding claim 12**, the printhead is exchangeable

Hirisawa et al. teaches the following:

***regarding claim 11**, a second ink tank (*color cartridge 10, Figure 2*) which stores cyan ink, magenta ink, and yellow ink (*col. 4, lines 11-13*) to be used for print operation in the second printhead substrate (*area 304, Figure 9*)

***regarding claim 12**, the printhead is exchangeable (*col. 3, lines 58-61*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Ono as modified by Tanaka et al.'s invention to have a second ink tank that stores cyan, magenta, and yellow inks. The motivation for doing so, is to allow replacement of a single color ink tank.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US 6471320 B2) in view of Imanaka et al. (US 6616257 B2)

Anderson teaches the following:

***regarding claim 13**, a printhead temperature control method in a case where printing is performed by exclusively driving a first and second printhead substrates (*first and second nozzle columns are read as printhead substrates, col. 2, lines 35-37*), of a printhead (*col. 2, lines 1-2*), with the same arrangement (*Column A 100 and Column B 200 have same arrangement, Figure 3*) each of which has a plurality of printing elements (*nozzles 113 and 213, respectively, Figure 3*), each including an electrothermal transducer (*firing resistor 48, Figure 2*), comprising the steps of:

inputting a printing signal to the first printhead substrate via a signal line (*nozzle data provided to register 102a, col. 6, line 66 – col. 7, line 1*) being shared with the second printhead substrate (*data line 50 is shared between both columns, Figure 3*);

Anderson does not expressly teach the following:

***regarding claim 13**, inputting a control signal for selecting the printing signal to the first printhead substrate incorporating a selection circuit which selects the printing signal and a predetermined signal for driving all the printing elements;

inputting a driving signal for driving the plurality of printing elements of the first printhead substrate, thereby printing; and

inputting a control signal for selecting the predetermined signal to the second printhead substrate incorporating the selection circuit so as to drive the printing elements of the second printhead substrate in accordance with a driving signal having a short pulse width insufficient to print

Imanaka et al. teaches the following:

***regarding claim 13**, inputting a control signal (*selection data*) for selecting the printing signal to the first printhead substrate (*element 1000, Figure 8 with col. 6, line 66 – col. 7, line 3*)

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incorporating a selection circuit (*selecting circuit, Figure 8*) which selects the printing signal and a predetermined signal for driving all the printing elements (*col. 11, lines 44-50*);

inputting a driving signal (*main heating pulse 908*) for driving the plurality of printing elements of the first printhead substrate, thereby printing (*col. 14, lines 51-53*); and

inputting a control signal (*selection data*) for selecting the predetermined signal to the second printhead substrate (*element 1000, Figure 8 with col. 6, line 66 – col. 7, line 3*) incorporating the selection circuit (*selecting circuit, Figure 8*) so as to drive the printing elements of the second printhead substrate in accordance with a driving signal (*col. 10, lines 50-53*) having a short pulse width insufficient to print (*col. 3, lines 43-48*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Anderson's invention to include a control signal that selects between a printing signal and a non-printing driving signal. The motivation for doing so, as taught by Imanaka et al., is to select a heating pulse to change the amount of ink that is discharged (*col. 11, lines 22-25*)

Allowable Subject Matter

Claims 5-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Communication with the USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelby Fidler whose telephone number is (571) 272-8455. The examiner can normally be reached on MWF 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shelby Fidler

SLF

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PRIMARY EXAMINER